

## **REMARKS/ARGUMENTS**

Claims 1-30 are pending in the present application. With this amendment, claims 1-2, 10-12, 20-22, 24-25, and 28-30 have been amended. Reconsideration of the claims is respectfully requested.

### **I. 35 U.S.C. § 101**

The Examiner has rejected claims 1-10 under 35 U.S.C. § 101 as being directed towards non-statutory subject matter. Specifically, the Examiner stated that claims 1-10 lacked a tangible result.

Applicants have amended claim 1 to recite: identifying a profit level for ones of a plurality of products or services; creating data for said plurality of products or services; and transforming, by the computing device, data that was created for said ones of said plurality of products or services by including said identified profit level in said data that was created for said ones of said plurality of products or services. Because the data is transformed, Applicants' claim 1 produces a tangible result. Therefore, this rejection is believed to be overcome and should be withdrawn.

### **II. 35 U.S.C. § 112, Second Paragraph**

The Examiner has rejected claims 1-30 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter, which applicants regard as the invention.

Specifically, the Examiner rejected the claims due to the language "such that the subset of associations determined . . . to generate a profit when cross-sold". Applicants have amended the claims to delete this language. Applicants have amended claims 1, 11, and 21 to recite: processing the identified associations to identify a subset of the associations, based on profitability analysis, that will generate a profit when cross-sold. Therefore, Applicants believe this rejection has been overcome by the amendments to the claims and should be withdrawn.

### **III. 35 U.S.C. § 103, Obviousness**

The Examiner has rejected claims 1-30 under 35 U.S.C. § 103(a) as being unpatentable over *Tamayo et al., Enterprise Web Mining System and Method*, Patent No. 6,836,773, dated December 28, 2004 (hereinafter "*Tamayo*"). This rejection, as it might be applied to the claims as amended, is respectfully traversed.

Applicants' claims 1, 11, and 21 recite similar features. Claim 1 is representative of claims 11 and 21. Claim 1 recites identifying a profit level for ones of a plurality of products or services; creating data for said plurality of products or services; transforming, by said computing device, data that was

created for said ones of said plurality of products or services by including said identified profit level in said data that was created for said ones of said plurality of products or services; storing said transformed data and data that was created for other ones of said plurality of products or services to form stored data; processing said stored data to identify associations of said plurality of products or services for potential cross-selling; Said processing including generating at least one association rule that includes a profit level, which was identified for one of said plurality of products or services, embedded in said at least one association rule; and processing the identified associations to identify a subset of the associations, based on profitability analysis, that will generate a profit when cross-sold.

Examples of support for these amendments can be found in Applicants' specification, page 29, line 27, through page 31, line 28.

The Examiner states:

**As to claims 1, 11, and 21,** Tamayo teaches processing data to identify associations of products in paragraph 22 of his detailed description. He teaches using the results for potential cross selling in paragraph 28. Tamayo teaches using data mining for profitability analysis in paragraphs 22 and 28. Tamayo also teaches in paragraph 185 weighting recommendations according to business rules, with an example using profit to identify a high-value recommendation. His recommendations can be based on associations but he allows for other paradigms, as well.

Office Action mailed January 8, 2007, page 4.

The Examiner has cited U.S. Patent 6,836,773 issued to *Tamayo*. The Examiner refers to paragraph numbers in the issued patent, and does not cite column and line numbers. It is unclear to Applicants which specific sections of U.S. Patent 6,836,773 the Examiner is referring to in the rejection.

Applicants have noted that a corresponding Patent Application Publication 2002/0083067A1 was published by *Tamayo* in which the invention was disclosed. Patent Application Publication 2002/0083067A1 includes numbered paragraphs. The Examiner refers to paragraph numbers 22, 28, and 185. These paragraphs, taken from Patent Application Publication 2002/0083067A1, are reproduced below:

[0022] FIG. 7 is an illustration of the spectrum data used by web, e-commerce, and enterprise businesses.

[0028] FIG. 13 is a data flow diagram of a model scoring step and a prediction/recommendation generation step shown in FIG. 11.

[0185] Generally, the training data can be consolidated in three types of tables shown in FIG. 15. The first type of table is a traditional corporate mining table 1502 in which, for example, each row corresponds to a customer and each column is an attribute such as age, account type, payment status etc. For example, in table 1502, row 1504-1 corresponds to customer 1, row 1504-N corresponds to customer N, column 1506A

corresponds to attribute A, column 1506B corresponds to attribute B, and column 1506C corresponds to attribute C. Examples of account attributes include:

These paragraphs do not describe identifying associations of products, using the results for potential cross selling, using data mining for profitability analysis, or weighting recommendations according to business rules. Therefore, Applicants do not believe these are the paragraphs referenced by the Examiner.

Applicants have searched *Tamayo* for any reference to “profit”, and have found the following references.

Most data mining problems are addressed according to one of three paradigms: supervised learning, association analysis, and clustering. These paradigms have been applied to numerous problems in corporate and database mining such risk assessment, attrition and retention modeling, campaign marketing, fraud detection, customer profiling, profitability and cross-selling. These application problems are usually viewed from an account- or user-centric point of view. All the relevant information for each user is merged and consolidated in one record. An input dataset then looks like a large, mostly populated two-dimensional table where the columns correspond to attributes (independent variables). In the supervised learning approach, one particular column provides the ‘target’ that is used as the dependent variable for the Data Mining model. Association modeling attempts to find associations: common patterns and trends in a less structured way (i.e. independent of a particular target field). These associations are supported by statistical correlations between different attributes of the dataset and are extracted by imposing independence, support, and confidence thresholds. Association analysis is applied to transaction or market basket data typically. In this case the datasets consists of transaction data listing a basket or group of items corresponding to an individual sale. The dataset is again a two-dimensional table but in this case potentially very sparse. Clustering is used for data-reduction and for class discovery. It is a method to find general correlation structures that group records into similarity groups. Clustering can be applied to both account or transaction-based datasets. Most data mining tool-sets support algorithms that provide instances of these paradigms but it is not common to encounter the three paradigms in a single problem.

*Tamayo*, column 8, line 65, though column 9, line 29.

Support a variety of mining problems (e.g., cross-selling, up-selling, market segmentation, customer retention, and profitability) that use as input web and corporate data.

*Tamayo*, column 9, lines 5-57.

Data mining engine 908 may be based on any standard data mining technology, such as the ORACLE DARWIN 4.0.RTM. data mining engine. Data mining engine 908 generates data mining models using several machine learning technologies. Each machine learning technology is embodied in one or more modules that provide the model building functionality appropriate to each mode. Preferably, the supported machine learning technologies include: Naive Bayes modeling, Association rules, and decision tree models for the creation of inductive models. Naive Bayes models provide the capability of fast incremental learning. Decision trees of the classification and regression tree (CART) type provide transparent and powerful on-line rules and may be batch trained. In addition, a self organizing map clustering module provides the capability to address segmentation and profiling. The supported web mining methodologies provide the capability to perform a wide range of end-use functions. For example, the present invention may support the on-line customer lifecycle, which includes elements such as customer acquisition, customer growth, customer retention and lifetime profitability. Additional examples include click through optimization or web site organization.

*Tamayo*, column 12, line 55, though column 13, line 9.

Decision trees and association rules return recommendations based on abstractions (models) of shopping cart history or corporate records that are built in advance. K-nearest neighbors score the current shopping cart against the table of aggregate transactions for each customer. Confidence measure for each possible recommended product can be constructed for all three methods. These confidence measures should be complemented with weights derived from business rules. For example, although product A is a product more likely to be bought than B, the profit from product B is higher, making it a more desirable product to be sold from the merchant's point of view. The key measure is the expected profit from a recommendation: (probability (confidence) of a recommendation being bought).times.profit. Here is a clear example of why an application-oriented layer is necessary. In the third case above where all the different tables are used, a two-stage process is probably desirable. First the customer profile is recovered by assigning him to a demographic and a browsing behavior cluster. Then the recommendation is computed taking in account only the transactions generated from customers belonging to the same profile. The rational here is that we should look for similar basket among people with similar demographics, for example.

*Tamayo*, column 28, lines 10-33.

### Profitability

Profitability requires segmentation and keeping track of changes of a metric (e.g., purchases in dollar, number of visits) against the average of the measure in the customer's segment. If the customer is

below a defined threshold (e.g. the average) then the system tries to sell more.

*Tamayo*, column 28, lines 58-63.

Applicants have not found any other references to profit or profitability in *Tamayo*. Therefore, Applicants' comments will be directed to the teachings reproduced above.

*Tamayo* teaches obtaining product recommendations using association rules. These association rules return recommendations based on shopping cart history or corporate records that are built in advance. Confidence measures for each possible recommended product can be complemented with weights derived from the level of profit of each product.

*Tamayo* does not teach, however, embedding a profit level in the association rule itself. The weights that complement the confidence measures are not described as being embedded in the rule. Therefore, *Tamayo* does not render Applicants' claims obvious because *Tamayo* does not teach embedding a profit level in an association rule.

Applicants have also claimed identifying a profit level for ones of a plurality of products or services; creating data for said plurality of products or services; and transforming data that was created for said ones of said plurality of products or services by including said identified profit level in said data that was created for said ones of said plurality of products or services. The transformed data and the data for the other products or services are stored to form stored data. This stored data is then processed to identify associations. Thus, the profit level is included in the product or service data itself, which is then processed.

*Tamayo* does not teach including profit levels in the data that is created for products or services. As discussed above, *Tamayo* teaches merely complementing confidence measures with weights. This does not teach including profit levels in the product or service data that is then processed to identify associations.

The remaining claims depend from the independent claims discussed above and are patentable for the reasons given above.

Applicants have amended claims 10, 20, and 30 to recite wherein creating data for said plurality of products or services includes creating a unique identifier for each one of said plurality of products or services; and wherein transforming data that was created for said ones of said plurality of products or services includes modifying said unique identifier that was created for each one of said ones of said plurality of products or services to indicate a profit level that was identified for each one of said ones of said plurality of products or services. Support for these amendments can be found in Applicants' specification on page 30, lines 8-16.

*Tamayo* does not render Applicants' claims 10, 20, and 30 obvious because *Tamayo* does not teach or suggest modifying the unique identifier for each one of the ones of the plurality of products or services to indicate a profit level that was identified for each one of the ones of the plurality of products or services.

Because *Tamayo* does not teach or suggest the features of Applicants' claims, *Tamayo* does not render Applicants' claims obvious. Therefore, the rejection of claims 1-30 under 35 U.S.C. § 103(a) has been overcome.

**IV. Conclusion**

It is respectfully urged that the subject application is patentable over *Tamayo* and is now in condition for allowance.

The examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

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Respectfully submitted,

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